

# ORBITAL

GLOBAL SOLUTIONS

A graphic element consisting of a thin black arc that curves from the right side of the text 'GLOBAL SOLUTIONS' down to a solid black circle, which is positioned below the letter 'L'.

Thermowell

# Introducing VE Thermowell



“A complex and meticulously researched and engineered product, providing you the customer with a simple and assured application, every time.”

VE Technology® have overcome an engineering challenge that has thwarted the thermowell industry for many years!

We have discarded the traditional approach of a simply engineered product that requires complex and costly calculation and risk assessment for each application. Instead we have taken it upon ourselves to meticulously research and engineer a technically complex product, providing you the customer with a simple and assured application, every time.

- **No longer do you need to make extensive, costly wake calculations to be confident your equipment is safe from vortex induced vibration.**
- **No longer is there a concern about thermowell failure or, worse still, a major pipeline failure caused by poor thermowell design.**
- **Finally we can deliver the best possible performance AND safety, with total confidence in both.**

“Finally we can deliver the best possible performance AND safety, with total confidence in both.”



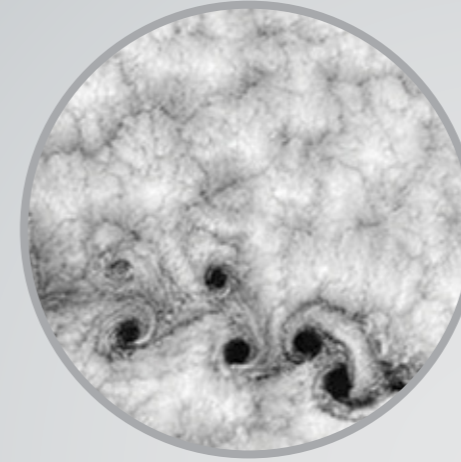
# Vortex-Induced Vibration

➤ “Rather than mitigating the symptom of vortex-induced vibration at the cost of performance and safety assurance, VE have tackled the root cause of this issue with science and engineering – resulting in the safest AND best performing thermowell available.”

Vortex-induced vibration occurs when fast flowing fluid passes a bluff body, creating a pattern of disturbance (the Von Karman Street) that imparts alternating forces on the body. This well-documented effect can be seen in many industrial contexts and even in nature!

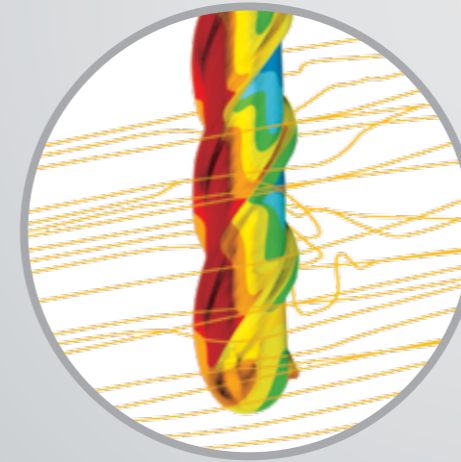
The result of these forces is an oscillation of the body, both in line with the flow direction and transversely. If the frequency of these oscillations approaches the natural frequency of that body, resonant vibration can occur, with extreme stresses and truly destructive consequences.

Typically, frequency calculations are made to ASME PTC 19.3 which often limit the ‘safe’ insertion depth, at the cost of measurement accuracy. Furthermore, engineers complying with industry standards such as AGA9/ISO/BS are forced to design excessively robust thermowells. However, these introduce hysteresis into thermal measurements and do not solve the problem: the vortex induced forces exist irrespective of strength and actually increase with increased diameter and may result in fatigue failure of the thermowell or potentially catastrophic stress cracking of pipeline welds.



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*The Von Karman Street observed in cloud patterns as the cloud mass passes the mountainous island of Alejandro Selkirk Island, Chile.*



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*A Computational Fluid Dynamics (CFD) image observing the absence of vortices or downstream disturbance introduced by the thermowell in a flowing gas stream.*

# VE Thermowell



➤  
“The VE Thermowell has a radical new design to give the best ever safety and performance.”

Not an aesthetic gimmick: the helical stoke design is a result of years of extensive fluid dynamic and engineering research. The stoke height, width, pitch and form are all meticulously calculated and precisely machined to effectively eliminate vortex-induced vibration.

The VE Thermowell has a radical new design to give the best ever safety and performance.

- Helical strokes eliminate all vortex induced vibration.
- Aerodynamic tip minimizes flow disturbance.

The thermowell is available as a single piece forging or welded to ASME standards and can be machined with an NPT connection thread, flange or any other connection type. All come with the exceptional VE Technology performance and reliability.

VE Technology have patented this powerful technology across the globe, and have been unique in solving vibration issues and long unsupported insertion applications again and again.



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## VE Thermowell



### Materials

Stainless Steel 316L (standard option), A105, Monel400, Duplex F51 (forged). Others by request.

### Connection to Process

Threaded flange (RF or RTJ) to ASME B16.5 welded to shaft according to ASME IX with dye pen testing, one-piece forged and machined structure. Others by request.

### Connection to Thermometer

½" Female NPT threaded connection as standard, custom available on request.

Bore size and Insertion Length. To customer specification.

### Ordering

Be sure to specify the following to ensure the best thermowell for your application:

- Material requirements.
- Process connection type and geometry (including pipeline standoff/insertion geometry).
- Non-standard thermometer connection details OR Supplier / Part Number of the device if you want a pre-assembled thermowell and sensor assembly.
- Media conditions: temperature, pressure, flow rate, viscosity, density.



Eliminate Uncertainty  
in Natural Gas Sampling

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